

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 06-201254

(43)Date of publication of application : 19.07.1994

(51)Int.Cl.

F25D 23/02

F25D 21/04

(21)Application number : 04-358765

(71)Applicant : SANYO ELECTRIC CO LTD

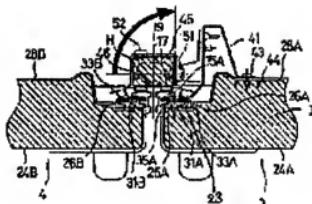
(22)Date of filing : 28.12.1992

(72)Inventor : IMAI NOBUMITSU

(54) REFRIGERATOR FOR BUSINESS**(57)Abstract:**

PURPOSE: To provide a refrigerator for business which is so freely arranged to set a storage chamber with a partition or without the same by mounting of a rotary partition body simply on a door.

CONSTITUTION: Intermediate members 31A and 31B are mounted on a door 3 which is produced by foaming a heat insulating material I to fill between an outer frame 24A, a gasket holder 26A and an internal door panel 28A. On the other hand, a partition body 19 is mounted on a metal support plate 41 fixed on the internal door panel 28A free to rotate. Gaskets 15A and 15B are mounted adjusting the mounting positions thereof with the intermediate members 31A and 31B so as to secure adhesion thereof to a steel plate 17 of the partition body 19 having a heater 46 for preventing frosting thereon. This allows the fastening of the partition body on the door with a simple assembling.

**LEGAL STATUS**

[Date of request for examination] 23.02.1998

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than

the examiner's decision of rejection or
application converted registration]

[Date of final disposal for application]

[Patent number] 3143246

[Date of registration] 22.12.2000

[Number of appeal against examiner's
decision of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

[Date of extinction of right]

*** NOTICES ***

JPO and NCIPI are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Industrial Application] This invention relates to an industrial refrigerator with the door of Kannon starting a ceremony.

[0002]

[Description of the Prior Art] In order that it may keep the inside of a warehouse airtight with the gasket formed in the rear face of both doors, the refrigerator which has the door of the conventional **** Kannon starting a ceremony has the common thing of a configuration of allotting perpendicularly and carrying out attachment immobilization of the stanchion used as the field where the gasket located in the un-supporting side of the door contacts so that the opening may be divided into an adiabatic box side, when both doors are shut.

[0003] However, in view of the fault which becomes obstructive also at **** of the goods from opening, while this stanchion reduces warehouse content volume, in recent years, the refrigerator of the type which attached in the un-supporting side of one door the batch object which can rotate freely instead of the above-mentioned stanchion is proposed so that JP,1-123979,B may see. Moreover, since it does not become obstructive to **** of goods since a batch object constitutes the contact side of a gasket from considering as the configuration which prepares a rotation-type batch object in one side of the door of Kannon starting a ceremony at the time of door closing and it keeps away from an opening edge in a door at the time of door opening, but the airtight engine performance is demonstrated enough again and dew condensation arises also in the front face of this batch object, the heater for prevention with dew has been formed in this. In that case, the lead wire for the electric supply to this heater is introduced in a door from the hinge region of a door, and he lets it pass in door urethane foaming, and is trying to derive it from the un-supporting side in which a batch object is attached conventionally, as shown in Fig. 5 of the above-mentioned official report, 6 Figs., etc.

[0004]

[Problem(s) to be Solved by the Invention] By the way, although a small refrigerator like the official report of the above-mentioned [the door of Kannon starting a ceremony / goodness / of the user-friendliness nature] is natural, it applies to the large-sized industrial refrigerator installed in kitchen rooms, such as a restaurant, and the convenience increases more.

[0005] In that case, in the industrial refrigerator, while there is weight of a door fairly, when a fixed stanchion receives a door from relation -- very many [and] switching frequencies may also be treated a little roughly [the actuation] -- it is broad, and it forms in a thick stanchion and is considering as structure with robustness.

[0006] Although it was also possible to, have diverted the technical means which indicate a rotation-type batch object in the above-mentioned official report to some other purpose on the other hand, and to have tried to an industrial refrigerator, in that case, large reservation of warehouse content volume could not be expected to be what pivots the batch object similar to the fixed above-mentioned broad and thick stanchion, but there were only problems, like components cost quantity and assembly take time and

effort. That in which a delimiter has front opening of a stockroom, and the thing which is not can carry out the arrangement configuration of the attachment by the door of this batch object free as an optional thing, and it enables it to offer the industrial refrigerator with which specification nature spread while accomplishing this invention in view of this above-mentioned problem first, enabling adoption of a geometrically small rotation-type batch object and aiming at improvement in cost reduction and assembly nature. Moreover, if it is in the conventional technique when carrying out wiring for electric supply at the heater for prevention with dew of a batch object, in the part introduced into the interior of a door from the hinge region of a door, lead wire may fix by urethane hardening after urethane foaming, and it may result in wear by torsion of the lead wire produced in rotation at the time of door opening close, an open circuit, etc. Moreover, sealing for a lead-wire takeoff connection is also needed, and excessive external force is not only applied to lead wire with an urethane blowing pressure, but in order to have to exchange doors in a lead-wire open circuit etc., it should adopt a means to avoid the embedding in urethane foaming of an electric equipment article (lead wire) as much as possible.

[0007] Therefore, an industrial refrigerator with the door structure which could wire easily, without having embedded the lead wire for supplying electric power to the heater for prevention with dew of a batch object in the 2nd this invention which should solve the above-mentioned problem in door urethane foaming, and letting it pass, and raised safety and serviceability is offered.

[0008]

[Means for Solving the Problem] The Kannon starting-a-ceremony door supported by these opening both sides free [rotation] so that this invention might blockade opening of an adiabatic box, The gasket which is formed in the rear-face periphery of both this door, respectively, and contacts said opening periphery, The shaft which protruded on the location of said opening edge corresponding to the un-supporting side of one of said door perpendicularly towards the inside of a warehouse, With a metal support plate, by the die length covering said opening edge, extend in the vertical direction and it is supported free [rotation] by the rear face for a non-supporting flank of one of said door. A narrow partition object with the curved slot for actuation which engage with said shaft, rotate with closed actuation of this door, and the rear face of the door of another side and this door is made to contact, It is prepared in the rear-face periphery of said both doors, respectively, and the pars intermedia material for gasket anchoring which holds said gasket in the location which contacts said partition object is prepared.

[0009] Moreover, the stowage which is established in the rear-face periphery of the heater for prevention with dew which was attached in the un-supporting side of one door of the Kannon starting-a-ceremony door supported by these opening both sides free [rotation] so that opening of an adiabatic box might be blockaded free [rotation], and which was divided and was installed inside the body and said partition object, and one [said] door, and contains the lead wire for electric supply of said heater is prepared.

[0010]

[Function] It has a metal support plate, and he equips the un-supporting side rear face of the door of Kannon starting a ceremony free [rotation of a narrow batch object] for while, and is trying to attach a gasket in the location which contacts a batch object with pars intermedia material in the rear-face periphery of a door.

[0011] Considering as a stockroom without the stanchion into which opening is divided by this does not change the basic structure of a door, but achievement of it is simply attained by a little components-additions.

[0012] Moreover, the lead wire for electric supply to the heater for prevention with dew formed in the batch object makes a formation **** stowage meet the rear-face periphery of a door, and can be made to carry out wiring processing simply.

[0013]

[Example] Hereafter, the example of this invention is explained based on a drawing.

[0014] 10 is used as the industrial refrigerator which has the unit room 2 in the upper part of an adiabatic box 1, and has the 1st door 3 of Kannon starting a ceremony, the 2nd door 4 and the 3rd door 5, and the 4th door 6, the body horizontal batch 8 is in the location which divides the upper and lower sides into

about two, a rack 9 and the shelf stanchion 11 grade which supports it are prepared in the interior, and stockrooms 12 and 13 are formed in the body opening 7 up and down. Said 1st door 3, the 2nd door 4 and the 3rd door 5, and the 4th door 6 are supported pivotably by the right-and-left edge of each opening of each stockroom 12 and 13 free [rotation] with the vertical hinge. Moreover, the gaskets 15A and 15B which contact the periphery of each opening and the body horizontal batch 8 are formed in the rear-face periphery of the 1st door - the 4th door. And a stanchion 16 is arranged in the lower stockroom 13 so that the opening may be bisected perpendicularly, and if the 3rd door 4 and the 4th door 5 are shut, it will magnetize and stick to the steel plate 17 with which the part of gasket 15B by the side of un-supporting [of the door] constitutes the front face of a stanchion 16.

[0015] On the other hand, although there is no stanchion in opening of the upper stockroom 12, when the 1st door 3 and the 2nd door 4 close, the plate-like shaft 18 protrudes on the upper limb part of opening which is the part which gasket 15A by the side of the un-supporting sticks toward the inside of a warehouse. And one 1st door 3 is equipped with the batch object 19 supported by the hinge of a vertical pair so that it might extend in the rotation shaft orientations of a door and rotation might become free at the rear face by the side of the un-supporting by the die length crossed to the vertical edge of opening among both the doors that open and close the upper stockroom 12.

[0016] Moreover, actuation slot 21A of the curved configuration operated so that it may follow on closing the 1st door 3 and going and the batch object 19 may rotate by said shaft 18 is formed in the end of this batch object 19, i.e., upper limit.

[0017] The batch object 19 in which this rotation is free here also serves as width of face and thickness with the small, geometrically small thing dimensionally as compared with said stanchion 16 of fixed installation.

[0018] Moreover, the compressor 23, the condenser 24, and the fan for condensers who were allotted in the unit room 2 constitute a refrigerating cycle with the evaporator which is not illustrated.

[0019] Furthermore, it is attached to the structure of a door and explains in full detail also with reference to drawing 2 - drawing 5 .

[0020] Since the 1st door 3 and the 2nd door 4 make a fundamental configuration the same, it is attached to the 1st door 3 and they are explained. In addition, on the drawing, B is given to the corresponding part number and it is suitably shown in the components about the 2nd door 4.

[0021] The 1st door 3 inserts gasket electrode-holder 26A which changes from a resin member to the perimeter of rear-face flange 25A of metal shell plate 24A, makes panel 28in door A made of resin contact the flange of this gasket electrode-holder 26A, between shell plate 24A, gasket electrode-holder 26A, and panel 28A in a door, carries out foaming restoration of the heat insulator I, and is manufactured.

[0022] 31A is attached by said gasket 26A and connection relation, is the pars intermedia material used in order to perform wearing by the side of a periphery from that of a door, and consists the gasket mentioned later of a resin member.

[0023] This pars intermedia material 31A inserts that one-side 32a in crevice 33of gasket electrode-holder 26A A, it is attached by putting more than one firmly with attachment screw 34A of a book on the rear-face flange of the 1st door 3 after that, and said crevice 33A and isomorphism-like crevice 35A are formed in other ****. That attachment root is inserted in gasket 15A with a built-in magnet by this crevice 35A, and it is attached in it.

[0024] 41 is a metal support plate for attaching the batch object 19 in the 1st door 3, and it has the piece 23 of a stop bent and formed in the inner sense in the 1 side while it has the wall 42 which projected back and was formed.

[0025] This support plate 41 makes that piece 23 of a stop together with one-side 32a of said pars intermedia material 31A, inserts it in crevice 33of gasket electrode-holder 26A A, makes an end fix, as shown in drawing 3 , and carries out a screw stop to the back up plate 44 which has laid the side part of that opposite side underground into the heat insulator I through panel 28in door A with the screw 43.

[0026] Respectively the batch object 19 carries out joint assembly of the batch element assembly of the trichotomy to which fitting of the heat insulator H was carried out to the inner hollow of the cross-

section horseshoe-shaped frame part material 45, and grows into it, and it is made to equip with steel plate 17A of die length which makes a little vertical edge project from the batch object 19 to the effective area side of the frame part material 45 in contact with the exposure of a heat insulator H. And the heater 46 for prevention with dew is arranged in the rear face of steel plate 17A. Furthermore, agonist 22A made of resin which prepared actuation slot 21A mentioned above is attached in the upper part of the batch object 19.

[0027] The batch object 19 is supported with the hinges 47 and 48 formed up and down, and if the 1st door 3 is opened, it will rotate in the direction of an arrow head in drawing 3 . Said hinges 47 and 48 are attached firmly to side-face 42b of the wall 42 of said support plate 41 with a screw 49. 51 shows the hinge shaft.

[0028] In this way, if it shuts as shown in drawing 5 , actuation slot 21A is guided to a shaft 18, and the 1st door 3 with the batch object 19 which is attached and which can be rotated is performed, and the batch object 19 will rotate counterclockwise centering on the hinge shaft 51, both gaskets 15A and 15A and steel plate 17A will contact and stick it, and it will carry out the seal of the inside of a stockroom 12.

[0029] On the other hand, if the 1st door 3 is opened, the batch object 19 will come to rotate conversely by the shaft 18, and return rotation will be carried out with the coil spring finally built in in the wall 42 of a support plate 41, and a location which is met. The cushion 52 made of rubber is formed in the opposed face of the batch object 17 and a support plate 41 so that the shocking hit by side-face 41b of a support plate 41 may be prevented at the time of this return. Moreover, since the batch object 19 was attached using the metal support plate 41, from the case where the rear face of the door made of conventional resin is equipped with a direct batch object, it becomes structurally firm and durability can be improved. Furthermore, in the batch object 19 in the condition of having returned, the tip 19b is set as dimension length which is located in a part for a dimension, and this side from wall 42 tip so that it may not protrude from a wall 42. With supplies, when shutting the 1st door 3 and going by this, since a wall 42 hits previously and the hit by the batch object 19 is avoided, components are damaged and the worries about it becoming impossible to use the batch object 19 etc. also disappear. 54 and 54 are the caps of the decoration member combination which inserts in the vertical edge of said pars intermedia material 31A, and fixes.

[0030] On the other hand, there are not the pars intermedia material 31A and 31B attached firmly to the 1st door 3 and the 2nd door 4, the metal support plate 41, and the batch object 19 of the 3rd door 5 shown in drawing 4 and the 4th door 6. However, except for these members, since it is the 1st door 3, the 2nd door 4, and an EQC in configuration, C and D are suitably attached and illustrated to the applicable member.

[0031] That is, the attachment root was directly inserted in the crevice of the gasket electrode holders 26C and 26D, and the gaskets 15B and 15B with a built-in magnet have attached it in it. In this case, as compared with the gaskets 15A and 15A of drawing 3 , it turns out that Gaskets 15B and 15B are arranged at the 3rd door 5 and the 4th door 6, respectively at the inside approach of a door.

[0032] since the thing of dimension also with the thickness and width of face sufficient [a stanchion 16] will be attached in order to give reinforcement nature, and this has allowances of enough in the contact area of the gaskets 15B and 15B to a stanchion 16 -- Gaskets 15B and 15B -- some of peripheries of a door -- even if it equips inside, it is because seal nature is fully securable.

[0033] In addition, a stanchion 16 is filled up with a heat insulator G among the breakers 58 and 58 made of resin which connect both these plates 57 and 17b with the front plate 57 and steel plate 17b which installed heater 46b for prevention with dew in the rear face, and is formed in it.

[0034] However, if improvement in large warehouse content volume, a cheap manufacturing cost, and assembly nature etc. is taken into consideration in the case of the 1st door 3 and the 2nd door 4 which replace a stanchion 16 and carry out the seal of the stockroom 12 with the rotation-type batch object 19, so-called smallness is more geometrically [than a stanchion 16 / narrow] suitable for the batch object 19.

[0035] Instead, in order to stick Gaskets 15B and 15B on the batch object 19 which becomes narrow

[contact area], it is necessary to prepare in the periphery marginal location of the location-modification 3 of Gaskets 15A and 15A, i.e., the 1st door, and the 2nd door 4.

[0036] Therefore, the case of the 1st door 3 and the 2nd door 4 makes the pars intermedia material 31A and 31B for gasket electrode-holder attachment assistance intervene, attaches Gaskets 15A and 15A, and is enabling wearing which changes the attaching position.

[0037] Although seal nature is made with the door configuration secured enough and considers as this door configuration even if it uses the geometrically small batch object 19 by this As compared with the 3rd door 5 and the 4th door 6, as additional components, it ends with modification of extent which needs the large gasket electrode holders 15A and 15A the 1 surroundings, -izing of most component parts of a door can be carried out [****], and it becomes economical from the gaskets 15B and 15B of the pars intermedia material 31A and 31B, and the 3rd door 5 and the 4th door 6.

[0038] Next, the lead wire for supplying electric power to the heater for prevention with dew of a batch object is explained according to drawing 6 - drawing 9 about the 2nd this invention which wires a door.

[0039] In this example, it is considering as the door configuration which excluded the pars intermedia material for gasket attachment assistance used by the 1st explanation. And the thing same in components gives E to the applicable number, and attaches for it and explains it to the configuration section used as an important section.

[0040] As panel 28in door E made of resin is shown in drawing 7 , the joggle 62 of the periphery flange 61 which carried out the outward L character mold so that a semicircle might be surrounded mostly is formed in one. And the periphery flange 61 of panel 28in door E is made to contact extroversion flange 27of gasket electrode-holder 26E E, as shown in drawing 9 , foaming restoration of the heat insulator I is carried out between shell plate 24E, gasket electrode-holder 26E, and panel 28in door E, and a door 60 is created.

[0041] In addition, at the time of this door formation, the heat insulator 65 with through tube 64 is inserted in the interior of the support side up corner of a door 60, and with said gasket electrode-holder 26E and panel 28in door E, it is really foamed and is beforehand laid underground in the door 60.

[0042] 70 is a lead wire for electric supply connected in heater 46E for prevention with dew and the connector (not shown) of batch object 19E. If this lead wire 70 for electric supply is taken out from lower hinge 48of batch object 19E E It inserts from the opening 67 between the joggles 62 and the crevice 33E formation sections 66 of gasket electrode-holder 26E which were prepared in the periphery flange of said panel 28in door E. It dedicates to the space section 68 in joggle 62, and goes, and it is made for there to be along the edge of a door 60, and allots, and passes along the through tube 64 of said heat insulator 65, and wiring processing is carried out and carried out [connecting with an external electric equipment box etc. through the inside of the hinge shaft 81 of the upper hinge 80 for door 60 support, etc. and].

[0043] Moreover, when Gaskets 15E and 15E make the attachment root insert in crevice 33of gasket electrode-holder 26E E and it is equipped with them, it is blockaded in gasket 15E, and said opening 67 is not exposed outside, but appearance is maintained.

[0044] In this way, since it can wire easily, without embedding the electric supply approach to electric equipment articles, such as heater 46for prevention with dew of batch object 19E attached in door 60 E, in a door heat insulator, and letting it pass, in case heater 46E is exchanged, the door structure where it can exchange easily and improvement in safety and serviceability can be aimed at becomes possible.

[0045]

[Effect of the Invention] When asking for a certain stockroom as mentioned above in the configuration which is not divided with a stanchion among two or more stockrooms opened and closed in the door of Kannon starting a ceremony according to this invention, it can attain only by carrying out a components-addition to an oversized gasket and the door for the pars intermedia material which attaches this from the metal support plate supported for the narrow batch object and this which are replaced with a stanchion, enabling free rotation, and a stanchion and the hitting gasket of a door. therefore, a door -- common use -- it can do -- cost -- cheap -- carrying out -- and assembly -- the industrial refrigerator which makes it easy and can carry out the arrangement configuration of the stockroom without a batch

and a batch according to needs can be offered.

[0046] Moreover, it does not let the inside of the heat insulator in a door pass like before, but ** can also wire along the rear-face periphery of a door, and lead wire's [for electric supply] to the heater for prevention with dew formed in the batch object can improve a wiring activity and serviceability.

[Translation done.]